Neth Heart J (2011) 19:105–106
DOI 10.1007/s12471-011-0079-3

EDITORIAL

Electrical cardioversion in healthy pregnant women: safe yes, but needed?

H. J. G. M. Crijns

Published online: 25 January 2011

Sustained maternal arrhythmias during pregnancy that would require an electrical intervention are rare. The incidence and mechanisms, as well as the need for intervention, depend strongly on the background disease of the mother (to be). Electrical intervention may be indicated only with severe symptoms and drug refractory arrhythmias. The two cases of attempted electrical cardioversions (and a concise review of the literature of previous cases) by Tromp et al. reported in this issue of the journal [1] illustrate not only that cardioversion can be done safely but also that this intervention is hardly ever needed in the healthy pregnant patient.

In general, maternal arrhythmias are more frequent than expected and may be due to pregnancy-related haemodynamic and autonomic changes. The increase in intravascular volume may lead to stretch of the myocardium and activity of stretch-activated ion channels and hence ventricular and supraventricular arrhythmias. Likewise, increased adrenergic activity may provoke abnormal automaticity and even re-entry or triggered activity especially in susceptible patients, i.e. those with underlying heart disease. Diagnosis and management of these arrhythmias should take these potential mechanisms into account, especially since in many cases, an electrical intervention will not suffice or may even be futile because of non-shockability of the underlying arrhythmogenic mechanisms. Instead, arrhythmia treatment should in the first place consist of rate control.

H. J. G. M. Crijns (✉)
Department of Cardiology, Maastricht University Medical Centre, Maastricht, the Netherlands
e-mail: hjgm.crijns@mumc.nl

In the absence of structural heart disease, sustained arrhythmias are usually atrioventricular nodal re-entrant or atrial tachycardias, more seldomly atrioventricular reciprocating tachycardia, and almost never ventricular tachycardia. These arrhythmias virtually never lead to haemodynamic compromise nor do they need an electrical intervention. Sometimes healthy pregnant patients develop troublesome atrial fibrillation, which is most likely focal and adrenergic in nature. Acute electrical termination is only needed in the very rare instance when atrial fibrillation is associated with pre-excitation and ultrarapid ventricular rate. However, focal lone adrenergic atrial fibrillation is usually self-terminating, i.e. paroxysmal in nature: if left alone with sufficient rate control, it will stop spontaneously. Even though the physical effects are negligible for the foetus, electrical cardioversion should be avoided, as in the first case of the report. This holds especially since the trigger for the paroxysm of atrial arrhythmia—although in the end self-limiting—may still be active and cause acute recurrence, notably since the trigger is generally non-shockable. In other words, the patient could have been very well managed without electrical cardioversion. The above is quite well illustrated by the second case in which electrical cardioversion even failed to terminate atrial tachycardia, which had led to tachycardiomyopathy. Adrenergic activation was essential for both tachycardia initiation as well as the development of cardiomyopathy. In such a setting, acute cardioversion may be futile. Rhythm control can only be successful after reaching control of adrenergic activation by heart failure medication including β-blockade.

If electrical cardioversion is needed, precautionary measures as suggested in the report by Tromp et al. should be taken. However, although seemingly attractive and also advocated by

guidelines [2], electrical cardioversion is almost never needed to control arrhythmias in healthy pregnant women.

References

1. Tromp CHN, Nanne ACM, Pernet PJM, et al. Electrical cardioversion during pregnancy: safe or not? Neth Heart J. 2011 (in press)
2. Camm AJ, Kirchhof P, Lip GYH, et al. Guidelines for the management of atrial fibrillation. The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology. Eur Heart J. 2010;19:2369–429.